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CROSS-REFERENCE TO RELATED APPLICATIONS

This application is related to prior U.S. Provisional Application Serial No. 60/445,635 filed February 7, 2003.

20 In a preferred embodiment, we describe polyvinylether polymers for delivery of  
polynucleotides to cells. The polynucleotide may be a DNA, RNA or synthetic  
polynucleotides. The cell may be *in vitro* or *in vivo*. A preferred polyvinylether is an  
amphiphilic polyvinylether. The polyvinylether polymers may contain monomer subunits  
selected from the list comprising: alkyl vinylethers, positively charged vinylethers, negatively  
charged vinylethers, aryl vinylethers, and polyethyleneglycol-containing vinylethers[[],].

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In a preferred embodiment, we describe polymeric transfection agents comprising:  
polyvinylether polymers. The copolymerization of alkyl vinylether monomers and amine-  
protected vinylether monomers yields amphiphilic cationic polymers that can be used to  
~~delivery~~ deliver polynucleotides to mammalian cells. Following polymerization of the  
30 monomers, the amine protective group is removed to yield the positively charged amine.